# "Biology of *Notopterus chitala* (Hamilton, 1822) from Nanded region Maharashtra State"

A
Synopsis
Submitted to

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स्वामी रामानंद तीर्थ मराठवाडा विद्यापीठ, नांदेड.

For the registration of

## Doctor of Philosophy

In Zoology
(Faculty of Science & Technology)

By

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# Short Resume / Synopsis of Ph.D. topic

# "Biology of *Notopterus chitala* (Hamilton, 1822) from Nanded region Maharashtra State"

## 1. Abstract of proposed plan/ problem

Fishes are cold blooded animals, typically with bones, gills and fins and are primarily dependent on water as a medium in which to live. Fish are abundant in most bodies of water. They can be found in nearly all aquatic environments, from high mountain streams (e.g. Char and gudgeon) to the abyssal and hadal depths of the deepest oceans (e.g. gulpers and anglerfish). At 33,000 species, fish exhibit greater species diversity than any other group of vertebrates. Fish also found in the fresh water, hill streams, estuarine, sewage etc. Fish are an important resource for human worldwide, especially through ages, serving deities, religious symbols and as the subject of arts, books and movies. Fish range in size from the tiny 8 mm stout infant fish to the huge 18 meter whale shark.

Fishes form an important element in the economy of many nations as they have long been a stable item in the diet of many people. They constitute slightly more than one-half of total number of approximately 54,711 recognized living vertebrate species; there are descriptions of an estimated 27,977 valid species of fishes (Nelson, 2006). Fishes form a rich source of food. They provide many products and by- products. The fish catching is a major source of lively hood of many fishermen and tribal in the area. The fishes collected are sold in the local markets.

Aristotle (384 – 327 B.C.) is said to be the founder of Ichthyology. Fishes of the inland water bodies of the Indian sub-continent have been subject of study since last century, Hamilton Buchannan (1822), Day (1878), Misra (1962), Jayram (1981), Talwar and Jhingran (1991), Rao*et al*., (1999). Indian inland water resources are diversified, as they are plentiful. Lakes and reservoirs contribute the single largest inland fishery resources, both in terms of size and production potential.

The nutritive and medicinal value of fish has been recognized from time immemorial millions of human beings suffer due to hunger and malnutrition and fishes are the rich source of food and provide good staple to bear down the nutritional need of man, *Notopterus chitala* is a fresh water fish. This is a wide variety of habitats, including fast and slow flowing rivers and streams. *Notopterus chiatala* is a clown knifefish from India, Nepal, Combodia, Pakistan found in Mahanadi, Thailand, Loas, Brahmaputra and Ganges river baisns.

Reports of *Notopterus chitala* from Thailand and Indo-China were based on *Chitala ornata* and those from Malaysia and Indonesia on *Chitala lopis.* Adults inhabit freshwater rivers, lakes, beels, nullahs in the plains, reservoirs, canals, ponds & marshy meadows. *Notopterus* is widely distributed in India, Myanmar and West Africa, *N. chitala* is exclusively found in the fresh-waters of India. It is commonly inhabits marshy meadows, lakes, fresh-water of brackish water. It is a bottom feeder, carnivorous, predacious and feeding on small organisms, insects and crustaceans.

Present fish for study has elongated, compressed, Head contains large and oblique mouth, whitish eyes and nostrils. Body divided into head, trunk and tail. Body is very strongly compressed with a short pre-caudal region and measuring about 1.5 meters in length. Colour is silvery dark or greenish or glossy yellow on the back. Paired pectorals and ventral fins closely placed. It has a series of fairly small, sometimes indistinct, non-ocellated dark spots towards the far rear of the body (at the "tail"). Dorsal fin is short and ventral fin very much reduced or absent. Very much elongated anal fin confluent with reduced caudal fin. This is abundantly found fish in river Godavari representing most of the sampling stations.

*Notopterus chitala* is exclusively fresh water, brakish, benthopelagic and potamodramous fish. In India it is a widespread and is also found in Nepal, Bangladesh, Pakistan and Bhutan. *Notopterus chitala* is economical and valuable food fish. It is also used as ornamental fish in large aquarium. It is found abundantly in Marathwada region in Nanded, Latur, Parbhani, and Aurangabad. As it is economical and valuable food fish and yet nobody has studied in detail the Biology of *Notopterus chitala*, keeping in above view proposed work selected for study of biology of *Notopterus chitala* from Nanded region. Biology of *Notopterus chitala* from Nanded region including;

- Systematic position of *Notopterus chitala*
- Biological aspect of *Notopterus chitala*
- Biochemical composition of *Notopterus chitala*

## 2. Review of literature and development in the subject:- (Previous work done in relevant area)

Many workers studied different biological aspects of freshwater as well as marine water fish since last 61 years. In India some of the workers who made extensive work in this fields are Alkunhi, K.H. (1956), Annigeri, G.G.(1969), Bapat, S.S.(1971), Bhatt, V.S.(1968), Hanumantrao,L.(1974), Kuthalingam, M.D.K.(1965), Muthiah, C.(1982), Prabhu, R.H.(1921), Rajan, S.(1964) Sobhana, B. and Balkrishnan Nair(1974), Somdutt and Santosh Kumar (1997).

## 3. Objectives of Research/ Proposed hypothesis:-

- To collect the freshwater fish "*Notopterus chitala"* from Nanded region (M.S.)
- Identification and Morphometric characters of the fish of *Notopterus chitala* to be studied.
- Assessment of fecundity of the fish *Notopterus chitala.*
- Assessment of Biochemical composition analysis of *Notopterus chitala.*
- Assessment of Reproductive organs of the fish *Notopterus chitala.*

## 4. Methodology to be adopted:-

- Fish "*Notopterus chitala"* will be purchased and collected from local market of Nanded. The identification of fish will be made with the help of classical work by Hamilton.
- Diversity of fish, Biochemical composition, Morphometric characters, and Reproductive organs will be carried out of standard methods.
- **Study area**: Nanded region.

## 5. Importance of study/ Society application:-

### ➢ National status:-

*Notopterus chitala* is easily available in four rivers in India. It is used as a food fish for human consumption and used as fish meal, fish manure and also used in number of ways in the form of by-products likes:-

**1. Fish Glue: -** Fish glue is made by boiling the skin, bones and swim bladders of fish. Fish glue has valued for its use in all manner of products form illuminated manuscripts to the Mangolian war bow.

**2. Fish fertilizer:** - Fish emulsion is a fertilizer emulsion that produced from the fluid remains of fish processed for fish oil and fish meal industrially.

**3. Fish Carcasses:**- After the usable portion are removed for human consumption, the remaining fish body guts, bones, cartilages, scales, meats etc. are put into water and ground up.

**4. Fish Sauce:** - It is a condiment that is derived from fish that have been allowed to ferment. It is essential ingredient in may curries and sauces. Such are the product, available form fish, which are nationally and internationally have the importance. Small or large scale industries are requiring in our area, to utilize the fish resource.

**5. Insulin:** - Insulin is a hormone used for correcting the condition called diabetes mellitus in humans. Fish insulin is more stable as it is not subjected to decomposition by protein splitting enzyme of pancreas.

- **International status**:-

Fish receives greatest place in the national dish in various countries. The growing realization of the importance of fish as food play important role in meeting the ever increasing global food problem in the context of the immense potential of resources for exploitation has been instrumental in the initialization of development of fisheries in many countries.

*Notopterus chitala* is a valuable food fish. It can export to other countries not only as food material but by concerning above all points (National status) & it gives benefit to Indian Government by earning forging exchange & also help as in Industrial progress.

It can also be used as ornamental fish.

## Significance of the study:

Present study will gives biology of the fish in which identification, morphometric characters, fecundity, reproductive organs, biochemical composition is included.

The finding will be present in the form of thesis.

## 6. Proposed work plan- with tentative chapter scheme / Formulation and structure of study

The topics of thesis will be,

- Systematic Position
- Maturity and Spawning
- Fecundity
- Ponderal Index
- Length weight relationship
- Statistical Relationship between Body Measurements
- Food and Feeding Habits
- Biochemical Composition
- Summary and Conclusion
- References

## 7. Year wise plan of work and Targets to be achieved

**First year**: - Introduction, Course work, Review of literature, Referencing, books and Methodology, Visit to various localities of Nanded for collection of *Notopterus chitala* and preservation of fish.

**Second year**: - Study of maturity, spawning, reproductive organs, fecundity, ponderal index, morphometric measurement, length weight relationship, food and feeding habit, biochemical composition.

**Third year**: - Summery, conclusion, bibliography, documentation, analysis of result, writing, typing and submission of thesis.

## 8. Expected Outcomes:-

- It will be new research and new suggestions to government for increase their revenue.
- It will be beneficial for new researcher and students for study of research regarding review and literature.
- It will be beneficial for human beings due to some medicinal value.

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